Abstract: Electron-energy-loss spectra of condensed hydrocarbons*

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Measurements are made of electron-energy-loss spectra of condensed hydrocarbons for incident electron energies between 100 and 700 eV and 0–36-eV energy loss. Ethane, *n*-butane, acetylene, ethylene, propylene, and 1,3-butadiene are condensed continuously as thick layers on a liquid-nitrogen-cooled Mo substrate. Structure found in the loss spectra are compared with features found in similar experiments of electron scattering in gases (ESG) and in measurements of photoabsorption in gases (PAG). Most spectra show two or three sharp peaks between 4- and 13-eV loss and a stronger feature between 15- and 36-eV loss. Structure in the loss spectra for ethylene, propylene, and 1,3-butadiene correspond closely with structure found in ESG and PAG experiments whereas no such correlation is found for acetylene, ethane, and *n*-butane. Preliminary conclusions are that ethylene, propylene, and 1,3-butadiene remain essentially unperturbed by condensation and electron bombardment (under present conditions), and that definitive analysis of the data for the other gases will become possible when more spectra are accumulated for intercomparison.

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Abstract: Analysis of the $M_{4,5}VV$ Auger spectrum of silver

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Especial difficulties have been encountered in relating valence-band Auger spectra of transition-metal surfaces with properties of the valence band. Our measured $M_{4,5}VV$ Auger spectra of silver and of oxidized silver are quite similar to the self-fold of their respective valence-band densities of states, approximated by our measured ultraviolet photoelectron spectra. No matrix element corrections are assumed, and a simple energy shift accounts for many-electron effects in these computations. If the three possible configurations of holes in the t_{2g}- or e_g-like final states are taken into account by using three slightly different many-electron energy shifts, the agreement is further improved.

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